

NOVEMBER/DECEMBER 2025

FAEL42/CAEL44 — BASIC PHYSICS — II

Time : Three hours

Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define transmission grating.
2. State Biot law.
3. What is Tyndall scattering of light?
4. What is population inversion?
5. Write any two properties of positive rays.
6. What are radio isotopes?
7. What are magic numbers?
8. What are quarks?
9. Define inertial frame of reference.
10. Define length contraction.

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) With the help of neat diagram show an experimental procedure to produce Newton's rings by reflected sodium light.

Or

- (b) Describe Half shade polarimeter.

12. (a) What is Raman effect? Give the theoretical explanation for Raman effect.

Or

- (b) Explain the characteristics of laser.

13. (a) Describe principle construction and working of Bainbridge's mass spectrometer.

Or

- (b) Explain artificial radioactivity.

14. (a) List out the general properties of nuclei.

Or

- (b) Write a short note on antimatter.

15. (a) State and explain the postulates of special theory of relativity.

Or

- (b) Explain the relativistic time dilation.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss the construction and working of a Laurent's half shade polarimeter.

17. Describe the construction and working of a He-Ne laser with a neat diagram.

18. Describe vector atom model and explain its postulates.

19. Explain the classification of elementary particles.

20. Derive the Lorentz transformation equations.